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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,387

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Gunther Leising

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EXAMINER

HUBER, ROBERT T

ART UNIT

PAPER NUMBER

2892

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,387	Applicant(s) LEISING, GUNTHER	
	Examiner ROBERT HUBER	Art Unit 2892	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/17/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed June 17, 2006 is acknowledged. With respect to the Japanese documents 10-190065, 8-335719, and 8-335720, and the German document 10135306, they have not been considered because no English translation of the corresponding abstracts or specifications were supplied.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Mueller et al. (US 6,417,019 B1).

a. Regarding claim 1, **Mueller discloses a method for the production of a white LED having predetermined color temperature** (e.g. figure 6),

in which a blue LED or a UV LED (LED 8, disclosed in col. 5, lines 30 – 31 to emit blue or UV light) **is coated with a conversion layer which absorbs blue light or UV light and emits light of greater wavelength** (conversion layer 42 made of phosphor particles. Col. 8, lines 10 – 14 disclose the emission of longer wavelengths from the phosphor particles that are excited from the blue or UV light of the LED),

characterized in that the exact wavelength of the LED is determined before the application of the color conversion agent and then the color conversion agent is applied over this LED in a quantity and/or concentration dependent upon the determined wavelength (e.g. col. 7, lines 26 - 30 and col. 9, lines 60 – 65 disclose adjusting the composition and concentration of the phosphor particles in a conversion layer in response to desired chromaticity (wavelength) of the LED).

b. Regarding claim 4, **Mueller discloses the method according to claim 1, as cited above, characterized in that the color conversion agent is applied in per se known manner by means of deposition from the gas phase** (col. 8, lines 36 - 40 disclose various gas-phase deposition methods) **and the quantity and/or concentration is selected in dependence upon the determined wavelength** (e.g. col. 7, lines 26 - 30 and col. 9, lines 60 – 65 disclose adjusting the composition and concentration of the phosphor particles in a conversion layer in response to desired chromaticity (wavelength) of the LED).

4. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. (WO 00/12226). **Jones discloses a white LED light source** (e.g. figure 1, disclosed on page 5, lines 20 - 21 to be a full color OLED display. Page 2, lines 4 - 5 and 14 - 19 disclose the full color to be white light, made of all the primary colors), **which has a plurality of blue LEDs or UV LEDs** (e.g. as seen in figure 1, LEDs formed by multiple

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electrodes 12, layer 13, and electrode 14, disclosed on page 2, lines 4 - 5 to be multiple LEDs, and disclosed on page 5, line 25 to be blue emitting LEDs), **above which a conversion layer is applied** (layer 16, disclosed on page 5, lines 28 - 30), **characterized in that the quantity of the conversion layer above each LED depends upon the exact wavelength of the LED concerned** (The claim to "the quantity of the conversion layer above each LED depends upon the exact wavelength of the LED concerned" is not given patentable weight since the patentability of a product does not depend on the method of production. See MPEP 2113. The device of Jones discloses the claimed structure, regardless of how it was made, therefore it anticipates the claimed invention).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. in view of Jones et al.

a. Regarding claim 2, **Mueller discloses the method according to claim 1, as cited above, wherein the quantity and/or the concentration of the conversion layer is selected in dependence upon the determined wavelength** (e.g. col. 7, lines 26 - 30 and col. 9, lines 60 – 65 disclose adjusting

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the composition and concentration of the phosphor particles in a conversion layer in response to desired chromaticity (wavelength) of the LED). **Mueller is silent with respect to the method being characterized in that the color conversion agent is applied in per se known manner by means of dispenser or stamp.**

Jones discloses a method of forming a white LED (e.g. figure 1) in which a blue or a UV LED (LED formed by electrode 12, layer 13 and electrode 14) is coated with a conversion layer (layer 16), wherein the method is characterized in that the color conversion agent is applied in per se known manner by means of dispenser or stamp (dispenser 1, disclosed on page 5, line 31).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the method of Mueller to include the formation of the light conversion layer by means of a dispenser, as taught by Jones, since Jones discloses a very similar structure to that of Muller, but incorporates a formation of the conversion layer by means of a dispenser. One would have been motivated to use a dispenser since it is an effective way of forming a conversion layer on an LED, while reducing the harmful effects to the LED from lithography, as disclosed by Jones (page, 3, lines 17 - 26).

b. Regarding claim 3, **Mueller discloses the method according to claim 1, as cited above, wherein the quantity and/or the concentration of the conversion layer is selected in dependence upon the determined**

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wavelength (e.g. col. 7, lines 26 - 30 and col. 9, lines 60 – 65 disclose adjusting the composition and concentration of the phosphor particles in a conversion layer in response to desired chromaticity (wavelength) of the LED). **Mueller is silent with respect to the method being characterized in that the color conversion agent is applied in per se known manner by means of inkjet printing.**

Jones discloses a method of forming a white LED (e.g. figure 1) **in which a blue or a UV LED** (LED formed by electrode 12, layer 13 and electrode 14) **is coated with a conversion layer** (layer 16), **wherein the method is characterized in that the color conversion agent is applied in per se known manner by means of inkjet printing** (page 5, line 28 - 31).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the method of Mueller to include the formation of the light conversion layer by means of a inkjet printing, as taught by Jones, since Jones discloses a very similar structure to that of Muller, but incorporates a formation of the conversion layer by means of a inkjet printing. One would have been motivated to use inkjet printing since it is an effective way of forming a conversion layer on an LED, while reducing the harmful effects to the LED from lithography, as disclosed by Jones (page, 3, lines 17 - 26).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. in view of Collins, III et al. (US 2003/0181122 A1). **Mueller discloses the method of claim 4, as cited above, wherein the quantity and/or the concentration of the**

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conversion layer is selected in dependence upon the determined wavelength (e.g. col. 7, lines 26 - 30 and col. 9, lines 60 – 65 disclose adjusting the composition and concentration of the phosphor particles in a conversion layer in response to desired chromaticity (wavelength) of the LED). **Mueller is silent with respect to the method being characterized in that a mask, in particular a photomask, is produced, the apertures of which are selected in dependence upon the determined wavelength.**

Collins, III discloses a method of forming a white LED (e.g. figures 1A – 1F) **in which a blue or a UV LED** (LED 18, disclosed in ¶ [0005] may emit blue light) **is coated with a conversion layer** (layer 22, disclosed in ¶ [0021]), **wherein the method is characterized in that a mask, in particular a photomask, is produced** (mask formed by photoresist layer 20, disclosed in ¶ [0020] and [0021]), **the apertures of which are selected in dependence upon the determined wavelength** (e.g. as disclosed in ¶ [0016] and [0023], the aperture 20c is controlled by the light exposure).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the method of Mueller to include a mask, in particular a photomask, is produced, as taught by Collins, III, since Collins, III discloses a very similar structure to that of Muller, but incorporates a formation a photomask in order to form the light conversion layer on the LED. One would have been motivated to form a photomask since can be used to form a controlled, patterned layer with various gas-deposition techniques (¶ [0004] of Collins, III).

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8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. in view of Wojnarowski et al. (US 6,483,196 B1). **Mueller discloses the method according to claim 1, as cited above, but is silent with respect to method being characterized in that the color conversion agent is initially homogeneously applied in per se known manner and then selectively removed by means of a laser in dependence upon the determined wavelength.**

Wojnarowski discloses a method of forming a white LED (e.g. figure 13, disclosed in col. 6, lines 44 - 50) **in which a blue or a UV LED (LED 10) is coated with a conversion layer** (layer 62 (not shown), disclosed in col. 6, lines 51 - 60), **wherein the method is characterized in that the color conversion agent is initially homogeneously applied in per se known manner** (e.g. as disclosed in col. 7, lines 1 – 8) **and then selectively removed by means of a laser in dependence upon the determined wavelength** (e.g. as disclosed in col. 6, lines 55 – 60).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the method of Mueller to include the formation of the color conversion layer by applying it homogeneously and then using a laser to selectively remove it, as taught by Wojnarowski, since Wojnarowski discloses a very similar structure to that of Mueller, but incorporates a formation of the conversion layer by homogeneous formation and subsequent laser removal. One would have been motivated to apply the method of Wojnarowski since one can control the variations of the light output of the device by selectively removing portions of the conversion layer that adversely affect the device, as discussed in Wojnarowski (col. 6, lines 55 – 60).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HUBER whose telephone number is (571)270-3899. The examiner can normally be reached on Monday - Thursday (9am - 6pm EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thao Le can be reached on (571) 272-1708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lex Malsawma/
Primary Examiner, Art Unit 2892

/Robert Huber/
Examiner, Art Unit 2892
November 6, 2008